

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1. (currently amended) A combination reaction product of at least two chemical compounds, each one of these chemical compounds comprising:

a) a chemical moiety which may be the same or different among the chemical compounds of the reaction product (p,q,r,s) potentially capable of performing a binding interaction with a single target molecule;

b) an oligonucleotide or functional analogue thereof, comprising

i) at least one self-assembly moiety which is capable of binding to a self-assembly moiety of another one of the at least two chemical compounds; and

ii) a coding sequence unique to the chemical moiety of the compound to which it is attached;

wherein the at least two chemical compounds are bound to each other by their respective self-assembly moieties.

~~b) — an oligonucleotide (b,b',b'',b''') or functional analogue thereof with at least one self-assembly moiety (m,m',m'',m''');~~

~~the chemical compounds being bound to each other by their self-assembly moieties (m,m',m'',m'''), characterized in that the combination reaction product is stable in the absence of said target molecule, wherein the oligonucleotides (b,b',b'',b''') or functional analogues of at least one of the chemical compounds comprise a variable, unique coding sequence (b2,b2',b2'',b2''') individually coding for the identification of the particular chemical moiety (p,q,r,s).~~

2. (currently amended) The combination reaction product of claim 1, characterized in that the self-assembly moiety of each chemical compound is an oligonucleotide or

functional analogue thereof which is capable of binding to an oligonucleotide self-assembly moiety of another one of the at least two chemical compounds.~~moieties (m,m',m'',m''') are a self-assembly sequences (b1,b1',b1'',b1''') of the oligonucleotides (b,b',b'',b'''), functional analogues thereof, ligands (1) capable to perform a complex reaction with a specific ion (i), or peptides capable of association with other molecules.~~

3. (currently amended) The combination reaction product of claim 1, characterized in that the at least two chemical compounds each comprise a chemical group, which may be the same or different, and which is capable of covalently linking the chemical compounds together ~~by which they are covalently linked together~~ after the stable combination reaction product ~~had been~~ is formed.
4. (currently amended) The combination reaction product of claim 1, characterized in that the oligonucleotide[[s]] ~~(b,b',b'',b''')~~ or functional analogue[[s]] thereof are of each chemical compound is covalently and directly linked to the chemical moiety moieties(p,q,r,s) of that chemical compound.
5. (currently amended) The combination reaction product of claim 1, characterized in that the oligonucleotide[[s]] ~~(b,b',b'',b''')~~ or functional analogue[[s]] thereof of each chemical compound further comprises a linking portion ~~(b3,b3',b3'',b3''')~~ which is situated between the self-assembly sequence ~~(b1,b1',b1'',b1''')~~ and the chemical moiety of that compound (p,q,r,s).
6. (currently amended) The combination reaction product of claim 1, characterized in that the coding sequence ~~(b2,b2',b2'',b2''')~~ of oligonucleotide (b,b',b'',b''') or the functional analogue thereof of each chemical compound is situated between the chemical moiety ~~(p,q,r,s)~~ and the self-assembly sequence ~~(b1,b1',b1'',b1''')~~ of that chemical compound.

7. (currently amended) The combination reaction product of claim 1, characterized in that it is a dimer, trimer or tetramer of the at least two chemical compounds. ~~exhibiting chemical moieties (p,q,r,s).~~
8. (currently amended) A chemical library comprising a plurality of combination reaction products according to claim 1. ~~of at least two chemical compounds, each one of these chemical compounds comprising;~~
  - a) ~~—a chemical moiety (p,q,r,s) potentially capable of performing a binding interaction with a single target molecule;~~
  - b) ~~—an oligonucleotide (b,b',b'',b''') or functional analogue thereof with at least one self-assembly moiety (m,m',m'',m''');~~~~the chemical compounds being bound to each other by their self-assembly moieties (m,m',m'',m'''), characterized in that the combination reaction product is stable in the absence of said target molecule, wherein the oligonucleotides (b,b',b'',b''') or functional analogues of at least one of the chemical compounds comprise a variable, unique coding sequence (b2,b2',b2'',b2''') individually coding for the identification of the particular chemical moiety (p,q,r,s).~~
9. (currently amended) The chemical library of claim 8, characterized in that the self-assembly moiety of each chemical compound is an oligonucleotide or functional analogue thereof. ~~moieties (m,m',m'',m''') are a self-assembly sequences (b1,b1',b1'',b1''') of the oligonucleotides (b,b',b'',b'''), functional analogues thereof, ligands (l) capable to perform a complex reaction with a specific ion (i), or peptides capable of association with other molecules.~~
10. (currently amended) The chemical library of claim 8, characterized in that the at least two chemical compounds each comprise a chemical group which may be the same or different, and which is capable of covalently linking the chemical compounds together

~~by which they are covalently linked together~~ after the stable combination reaction product ~~had been~~ is formed.

11. (cancelled)
12. (currently amended) The chemical library according to claim 8, characterized in that the members of the plurality comprise its individual combinations of moieties (p,q,r,s) ~~is derived by forming~~ heteroduplexes, heterotriplexes or heteroquadruplexes of the self-assembly sequences ~~(b1,b1',b1'',b1''')~~ of the oligonucleotides (b,b',b'',b''').
13. (currently amended) The chemical library according to claim 8, characterized in that its individual members comprise chelates combinations of moieties (p,q,r,s) ~~is derived by~~ chelation of the self-assembly moieties ~~(m,m',m'',m''')~~ with the same ion. ~~specific ions (i).~~

Claims 14 to 17 (cancelled).

18. (currently amended) A method of biopanning ligands specific for target molecules, wherein a plurality of combination reaction products according to claim 1 is incubated with a target molecule and the chemical moieties associated with a combination reaction product that interacts with said target molecule are identified. ~~the combination reaction product comprising at least two chemical compounds, each one of these chemical compounds comprising:~~
- e) ~~a chemical moiety (p,q,r,s) potentially capable of performing a binding interaction with a single target molecule;~~
  - d) ~~an oligonucleotide (b,b',b'',b''') or functional analogue thereof with at least one self-assembly moiety (m,m',m'',m''');~~
- ~~wherein the chemical compounds are bound to each other by their self-assembly moieties (m,m',m'',m'''), characterized in that the combination reaction product is~~

~~stable in the absence of said target molecule, wherein the oligonucleotides (b,b',b'',b''') or functional analogues of at least one of the chemical compounds comprise a variable, unique coding sequence (b<sub>2</sub>,b<sub>2</sub>',b<sub>2</sub>'',b<sub>2</sub>'') individually coding for the identification of the particular chemical moiety (p,q,r,s).~~

19. (currently amended) The method of claim 18, characterized in that the self-assembly moiety of each chemical compound of the combination reaction product is
- i) an oligonucleotide or functional analogue thereof which is capable of binding to an oligonucleotide self-assembly moiety of another one of the at least two chemical compounds;
  - ii) a ligand capable of binding to the same ion as a ligand self-assembly moiety of another one of the at least two chemical compounds; or
  - iii), a peptide capable of associating with a peptide self-assembly moiety of another one of the at least two chemical compounds. ~~combination reaction products according to at least one of claims 1 to 7 are utilized for biopanning.~~

Claims 20 to 22 (cancelled).

23. (currently amended) The method of claim ~~22~~19, characterized in that the chemical moieties are coupled as iodoacetamido- or maleido-derivatives in sub-library (A) or in sub-library (B) respectively, iodoacetamido- or maleido-derivatives of n or m ~~chemical entities are coupled~~ to individual DNA oligonucleotides, which carry a thiol group at the 3' or 5' end.

Claims 24 to 29 (cancelled).

30. (currently amended) The method of claim 37, wherein said chemical compounds comprise heterotrimers or heterotetramers. ~~characterized in that libraries are allowed to self-assemble in order to form trimeric or tetrameric complexes by using~~

~~three or four chips, respectively, which carry distinctive target oligonucleotides for decoding.~~

31. (currently amended) The method of claim ~~27~~37, characterized in that the DNA of selected binding moieties is PCR amplified prior to chip hybridization.
32. (new) The combination reaction product of claim 1, wherein the self-assembly moiety of each chemical compound is a ligand capable of binding to the same ion as a ligand self-assembly moiety of another one of the at least two chemical compounds.
33. (new) The combination reaction product of claim 1, wherein the self-assembly moiety of each chemical compound is a peptide capable of associating with a peptide self-assembly moiety of another one of the at least two chemical compounds.
34. (new) The method of claim 19, wherein the individual chemical moieties, associated with combination reaction products that interact with said target molecule, are identified by generating and identifying unique PCR products utilizing primers complementary to either or both of said coding sequences, and self-assembly moieties.
35. (new) The method of claim 34, wherein at least a portion of said coding sequence, or the functional analogue thereof, is situated internal to said self-assembly moiety in one of said chemical compounds and the corresponding internal region on the other chemical compound is occupied by abasic nucleotides.
36. (new) The method of claim 34, wherein the sequences of the unique PCR products are identified by first digesting said products with a sequence specific endonuclease, followed by concatemerization and subcloning of said products into a suitable plasmid, and finally by directly sequencing the region of the recombinant plasmid harbouring said products.

37. (new) The method of claim 19 wherein the individual chemical moieties, associated with combination reaction products that interact with said target molecule, are identified by hybridizing said coding sequences to complimentary oligonucleotides immobilized on one or more chips.
- 38 (new) The method of claim 37, wherein identification of chemical moieties associated with combination reaction products that interact with said target molecule, is followed by at least one successive round of biopanning with libraries of combination reaction products consisting only of chemical compounds containing said identified chemical moieties.
39. (new) The method of claim 38, characterized in that the binding condition(s) of the successive round(s) are increasingly more stringent and the possible combinations of the candidate chemical compounds are assembled individually or in smaller pools and assayed for binding to the target.